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Patterns and Dynamic Positioning of Pakistan's Revealed Comparative Advantage in Services Trade

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Abstract

Using bilateral trade data for 11 services categories, we examine the specialization patterns and dynamic positioning of Pakistan's comparative advantage in bilateral services, with major trading partners, from year 2007 to 2014. We applied Balassa's Revealed Comparative, Revealed Symmetric Comparative Advantage and Lafay's Trade Balance indices to determine how trade as well as specialization patterns have changed over the time. In addition, Galtonian regression and kernel stochastic have been applied to analyze the structural stability of comparative advantages. The study finds out that specialization patterns have become more polarized in bilateral services trade with most of the trading partners. Besides, in some services sector, reversal of comparative advantage has been observed in bilateral trade. This is the first study which enables us to assess the export performance of Pakistani services sector.

Keywords: Pakistan, Revealed Comparative Advantage, Revealed Symmetric Comparative Advantage, Trade Balance Index, Galtonian Regression, Services Trade Transformation. Bilateral Services Trade

Introduction

Services encompass a heterogeneous range of business activities usually having their outputs mostly intangible products Shelp (1981). It comprises of both intermediate services (distribution, construction, etc.) and final demand services (education, health, tourism, etc). The services sector, known as tertiary sector, is the most significant contributor to the national output for both developed and developing counties[1]. The significance of services sector is manifold. The service sector is playing a key role in the development of most of the countries. It connects different sectors of economy like primary sector industries, manufacturing, constructions, communications and transportation thus facilitating economic activities and value addition Hoekman and Mattoo (2008). Furthermore services growth has higher contribution in poverty alleviation than any other sector of the economy[2]. The economic activities of services sector is demonstrating a strong impact outside the national geographic boundaries of countries thereby linking regional as well as global trade and consequently increasing world welfare, Ghani and Clemes (2013).

[1] The contribution of services in GDP of low income, middle income and high income countries is 46%, 55% and 74% respectively. See figure -1A in appendix for details.
[2] World Bank presentation, "Role of Services in Economic Development"; Geneva, July 2012 (Data source: World Bank, 2010)

Moreover the technological advancements and globalization process has facilitated international trade in services. The post 1990's world economy is symbolized as "service economy", see Karmakar (2005). For instance since 1991, the value of services trade has increased from USD 877 billion to around USD 4720 billion in 2014 thus making it one of the fast growing sectors in global scenario[3].

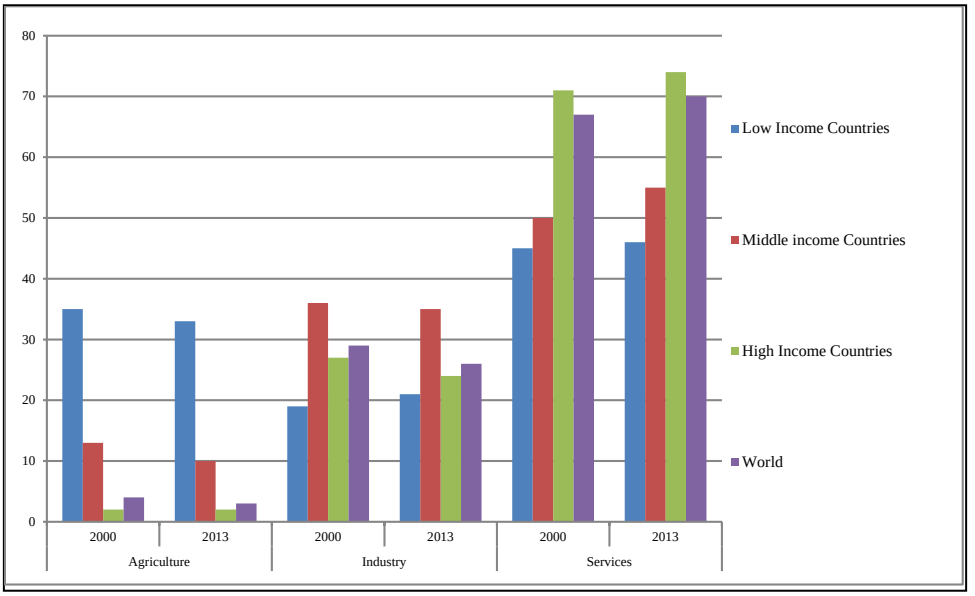

Figure 1: Sectoral Share in GDP for lower, middle and high income countries
Source: WDI, 2015

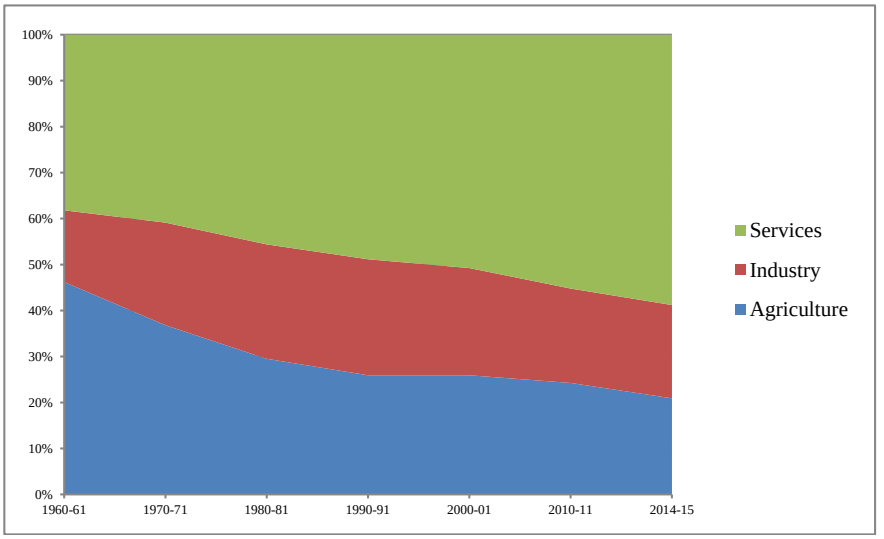

Figure 2: Sector wise Share in GDP of Pakistan
Source: Economic survey of Pakistan-2015

Traditionally services trade is dominated by developed economies but emerging economies like China, South Korea and India have also become important players in this sector during last decades. The availability of skilled human resources as well as technological progress is enabling

[3] World trade report (2014)

them to sell their services to the world. As far as Pakistan is concerned services holds major share in GDP as well as employment[4]. Services are also an important component of international trade for Pakistan and contribute around one fifth in total exports however Pakistan's share in total services exports less than a quarter of a percent. Keeping in view the increasing global competitive environment and growing importance of services sector in world trade as well as domestic growth, it is imperative to analyze where Pakistan's comparative advantage lies in services sector. This study therefore attempts to empirically examine or reveal patterns and dynamics of Pakistan's bilateral comparative advantages with United States of America (USA); United Kingdom (UK); United Arab Emirates (UAE); Peoples Republic of China (PRC), Kingdom of Saudi Arabia (KSA)[5] in international trade in services by using international trade data for the period of 2007 to 2014.

David Ricardo's (1817) principle of comparative advantage is the key concept in explaining the patterns of international trade among countries. It enunciates that a nation should specialize in the production of those goods and services in which it possesses a comparative advantage Salvator (2007). Although Comparative advantage is the most important concept in international trade literature but its estimation has been fraught with difficulties. This is because this principle is defined in terms of autarky prices, between two or more countries, which are complex to examine once the trade takes place. Therefore researchers have taken different proxies of comparative advantage such as relative exports performance which usually reflects differences in relative factor intensities and costs[6]. Balassa(1965) suggested the concept of Revealed Comparative Advantage (RCA). He asserted that comparative advantage can be revealed through observed trade pattern, i.e. higher export share in world market. Owing to its simplicity RCA measure has got general acceptance among the researchers and it has been widely used in explaining specialization and patterns of trade Yeats(1985); Bojnec (2001); Widodo (2009); Liu, Nath, and Tochkov (2015). Since its conception, RCA measure has gone through many modifications and revisions over the years. For instance Dalum,Laursen, and Villumsen (1998) proposed the concept of revealed symmetric comparative advantage (RSCA) and Lafay (1992) introduce the concept of Trade Balance Index (TBI) to augment Comparative Advantage (CA) analysis. The study applies all these measures to explain the patterns of specialization and CAs for trade in services for Pakistan. The aim of this paper is to achieve following objectives. (a) To present basic methods of estimating RCAs in bilateral trade in services. (b) To examine the patterns and dynamics of RCAs for Pakistan in services trade at disaggregate level. (c) To investigate mobility and direction of services exports specialization for Pakistan. (d) To suggest some policy recommendation derived from empirical findings. To our knowledge, no study has been conducted to analyze these issues with same countries as well as same data set. The rest of the paper has been organized as follows. The section two briefly outlines the previous literature; section 3 describes methodology and data description; empirical results are discussed in section 4 while the conclusion is presented in section 5.

Literature Review

The Revealed comparative advantage (RCA) index proposes a useful measure of examining a country's comparative advantage, based on actual (i.e. demonstrated) export performance. Balassa (1965) asserted that countries specialize and export those products which they can produce at relatively lower cost in comparison with other countries and vice versa. He argued that the comparative advantage of any nation mainly depends upon its physical as well as human capital resources. Any change in the availability of these resources along with trade policy will cause a shift

[4] see figure -2

[5] Pakistan does around 60% trade in services with these countries. See http://www.sbp.org.pk/publications/index2.asp

[6] See Nath et al (2015)

in the comparative advantage in different sectors of economy. Since then measure has widely been used by many researchers and intuitions in order to explain patterns of trade and international specialization both globally and bilaterally. This section recites some studies conducted previously in this regard.

Smith (1992) studied the main competitor counties of international trade in financial services. He analyzed the market of various financial services and estimated the performance based on the shares of the major institutions in Europe, UK and USA. He also explained how banking sector of different economies will behave under liberalized/open international environment.

The predictive power of RCA were empirical investigated by Barry and Hannan (2001) empirically examined the predictive power of RCA index for 10 Irish manufacturing sectors in which pre EU and post EU data was analyzed. Through estimation, the found that RCA index failed to predict post EU accession. He argued that the post EU developments were encouraged by foreign direct investment (FDI) and its sector wise destination inflows were not related to pre-accession RCA index. However he acknowledged that this measure was quite accurate to predict developments in local industry in Ireland. By applying Balassa's 'stages of comparative advantage model', Bender and Kui-Wai (2002) examined the export performance of some Asian and Latin American countries for the period of 1981-1997. They found that RCA indices nonetheless give an explanation on the movement of a region's comparative advantage however it does not differentiate between trade policy effects and factor endowment effects. The study also concluded that notwithstanding the robust export performance demonstrated by East Asian countries, these nations were also trailing their comparative advantages to Southeast Asian and Latin American economies. Fertő & Hubbard (2002) used Balassa's (1965) RCA indices and Vollrath(1991)[7] alternative specifications of revealed comparative advantage to investigate the performance of Hungary's agriculture-food RCA over the time period of 1992 to 1998. His finding showed that all the four measures confirm that Hungary has RCA in agriculture-food production at international level.

Takatoshi and Krueger (2003) examined impressive growth performance of services sector of Asian-Pacific countries. They also studied the impact of growing services like financial services, accounting, tourism and telecommunications on the economies of Hong Kong, Korea, and Taiwan. Langhammer (2004) argued that RCA measure in international trade in services can't be simply compared with RCA in international trade in goods. The basic difference lies because service sector is dominated by a variety of domestic regulations and serviced need consumer, producer proximity. He applied RCA measures on EU, US and Japanese services trade and concluded that RCA in services is more influenced by domestic regulatory measures as compared to border measures. Kumar (2005) analyzed the RCA in services trade for South Asian economies and stated that these economies have natural RCA in labor intensive services. He also analyzed potential of services trade under GATS frame and deducted that all South Asian economies have RCA in Mode 4 services moreover India has RCA in Mode 1 and Mode 2 types of services. By using RCA index Makoto (2007) studied the CA structure of US international trade in services. He described that variation in the RCA deviations refers to a resemblance between the export structure of USA and the world. He, therefore, concluded that USA has a strong RCA in Knowledge based services like Royalties and License Fees. Burange et al (2010) used RCA analysis to investigate the service trade performance for the period of 1980 to 2007. He identified that services sector performance has improved significantly with liberalization of International Trade and growth of India's exports of service is

[7] Vollrath (1991) suggested three alternative specification of RCA. i.e. Relative Trade Advantage (RTA),Relative Export Advantage (RXA) and Relative Import Advantage (RMA).

much higher than that of world exports growth. The service sector growth has also propelled the GDP growth rate of Indian economy thus making it a net exporter of services at world level.

Amighini, Leone, and Rabellotti (2011) applied Balassa's RCA index to examine Italy's pattern of International Specialization by taking into account of local specialization patterns for the period of 1995-2005. Their findings show a comparatively stable distribution of national RCA over time. However there are large deviations in local performances: only some provinces exhibit stability in their specialization over the time period under studied while most of the provinces demonstrate decreased specialization. By applying RCA indices on international trade data for 16 services types (Nath et al 2015) investigated the determinants, evolution and patters of USA's service trade India and China over the period of 1992-2010. His finding enunciates that USA has RCA in most of the service except travel and transportation while India and China and also gained CA in Computer and IT related services during the time period under studied. Moreover their estimations suggested that the abundance of sector-specific human capital, labor FDI have been major sources of CA for the U.S. over India and China.

In case of Pakistan, some studies have been conducted to explore the CA but the main focus has been on agriculture or agriculture related industries. For instance (Khalid,Jansen, and Malik (2010) applied RCA indices on the agriculture exports and identified that Pakistan has RCA in export of Rice, fresh and processed citrus fruits, mangoes, dates and vegetables. Naseem,Nadia,and Ejaz, (2009) applied RCA index to access the performance of footwear industry of Pakistan over the period of 2003 to 2006. They concluded that footwear industry has moved from comparative disadvantage (CDA) to comparative advantage during this time period and if this sector kept of growing then it is a potential industry for export earnings for Pakistan. Sadaf and Muhammad, 2013) used Balassa's RCA index to gauge the performance of leather industry of Pakistan with China and India. Their finds suggests that Pakistan has strong RCA in leather industry as compared to their neighboring countries. As far as services sector is concerned there is no comparative analysis available to weigh the performance international trade in services for Pakistan. Therefore this study will use RCA indices to examine international trade patterns and specialization for services sector of Pakistan by using data from 2007 to 2014. The services sector has been divided in to 11 categorized as designed by Balance of Payment Manual (BMP)-6 by International Monetary Fund (IMF).

Methodology and Data Description

Balassa's RCA index takes into account the share of a particular product in a country's aggregate exports relative to the share of that given product in total world trade. A country will have CA in that given good or service if its share in country's overall exports is comparatively greater than that of good or service in aggregate world exports. We transform RCA index to explain bilateral trade in services. In this case the world consist of only two countries therefore RCA for Pakistan's bilateral services trade with UK,USA,UAE, PRC and KSA is expressed as.

$$RCA_{ij} = \frac{((X_{ij})/(\sum_{j=1}^{n} X_{ij}))}{((X_{ij}+M_{ij})/(\sum_{j=1}^{n} X_{ij}+\sum_{j=1}^{n} M_{ij}))} \quad (1)$$

Here RCA refers to revealed comparative advantage and the subscript "i" and "j" stands for countries and services respectively. X_{ij} stands for the value of Pakistan's export of service "j" to country "i". M_{ij} denotes the value of Pakistan's import of service "j" from country "i". Hence we can say that RCA index in bilateral trade describes the share of specific service in aggregate exports to UK/USA (or any other country) relative to share of Pakistan's trade (exports plus imports) in this service with UK/USA (or any other country) in total Pakistan's services trade with that country.

This index may take the value from 0 to infinite. If the value of RCA is greater than 1 it means Pakistan has RCA in the export of given service and if the value of less than 1 it depicts that Pakistan have revealed comparative disadvantage (RCDA) in the specific filed of service. The RCA index is suffered from two main issues. First it is asymmetric[8], thus, the side of unity cannot be compare with value of other side of unity. To resolve this issue Dalum et al (1998) introduce the concept of revealed symmetric comparative advantage (RSCA) and proposed the following amendments in RCA index.

$$RSCA_{ij} = \frac{RCA_{ij} - 1}{RCA_{ij} + 1} \tag{2}$$

The RSCA value ranges from -1 to +1 which means if RSCA index value is positive then it mean that Pakistan has CA in the export of a specific service and vice versa. The second issue which was RCA index was that RCA only explain relative export performance and it does not explain net trade flow or intra industry trade. To cure this problem, Lafay (1992) suggested trade balance index (TBI) which explain net trade flow thus reflects whether a country has CA or CDA in a given good or service. The TBI formula can be expressed as follows.

$$\text{TBI} = \left[\frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}} - \frac{\sum_j X_{ij} - \sum_j M_{ij}}{\sum_j X_{ij} + \sum_j M_{ij}} \right] \times \frac{X_{ij} + M_{ij}}{\sum_j X_{ij} + \sum_j M_{ij}} \times 100 \tag{3}$$

Here TBI_{ij} refers to the balance of trade index of service" j" for country "i" and it measures the share of service "j" in overall normalized trade balance of services of Pakistan. The positive of TBI refers to existence of CA in a given service; the higher the value of TBI the greater the degree of specialization. Similarly negative TBI value indicates CDA and is the net importer of that given product[9] additionally, in order to investigate to what extent Pakistan has been able to transform its productive structure. We examine the changes in specialization patterns over time. We initially analyze the stability of TBI for these services sector and try to find out whether a change towards the dynamic products has taken place during this time period or not. We apply Galtonian regression[10] to examine Pakistan's services trade patterns. Galtonian technique applied by regressing the cross-section values of an index (TBI) at time period t2 on the cross-section values of the same index at the beginning period, t1. This technique gives us the information about how the pattern and degree of specialization have evolved during the time periods under study. We run the following regression for Pakistan's bilateral trade in services.

$$TBI_{ij}^{t_2} = \alpha_i + \beta TBI_{ij}^{t_1} + \varepsilon_{ij}. \tag{4}$$

Where t_1&t_2 refers to start and end year respectively. The dependent variable TBI at the time t_2 in country i & services J is regressed against the independent variable which is the value of TBI in the year t_1; α & β are the regression parameters where as ε_{ij} is a residual term. In our analysis we expect the value of α to be non significant, given the fact that both exogenous and endogenous variables have zero means. The interpretation of β is quite straight forward, if β=1 it means that

[8] see Laursen, k (2015) for further details.

[9] Although in the study we will consider a negative value of Lafay's TBI as CDA, yet it doesn't mean that the trade in such services sectors is not beneficial in terms of welfare for a country.

[10] This technique was originally developed by Galton (1889) and Hart & Praise (1956) firstly used it in to evaluate business concentration. After this regression has widely been used by different researchers such Hart (1995), Zaghini (2003) ,Sharma and Dietrich (2007),Frantzen (2008), and Hosein (2008) to analyze the changes in trade specialization pattern.

specialization pattern does not change during the time period under study; If β> 1: it means country's existing specialization has increased in those services in which it has already CA at the beginning of time and weakened in those services in which it had CDA; if 0<β<1 it shows that averagely specialization pattern has remained same however the TBI has somehow improved as compared to initial values and deteriorated for those with initial high value. At last β<0 indicates a radical change of CA. However Cantwell (1989) and Dalum et al. (1998) argued that the analysis of regression coefficient (β) per sé is not adequate to declare that variation in the scheme of CAs/CDAs determine a deviation in the degree of specialization. In reality, the regression coefficient (β) only describes what happened on average and it does not tell us about the changes in the dispersion of a distribution. In order to get some idea about the changes in dispersion of the distribution they suggested following equation which they directly derived from the regression equation.

$$\sigma_j^{t_2} / \sigma_j^{t_1} = |\beta_j| / |R_j| \quad (5)$$

From equation 6 we can see that degree of specialization rises when β2 >R2 and vice versa. A high variance reports that country has a high or narrow degree of specialization whereas a low variance indicates that the country has broad range of CA or lower degree of specialization. By using the calculated regression values, if $|\beta_j| > |R_j|$ it means the degree of specialization rises; if $|\beta_j| < |R_j|$ it shows a fall in extent of specialization[11]. At last but not the least kernel plots have been explained to measure the degree of specialization also.

The data has been taken from State Bank of Pakistan's various publications of exports and imports of services[12]. The services data has been divided in to 11 categories as per the sector a classification made by WTO[13].The data has been taken from the period of 2007 till 2014 although previous years data may also be helpful for more appropriate analysis but it could not be made possible because of non-availability of data at such disintegrate level.

The symmetric shape of TBI[14] and RSCA helps to find out the nature and dynamic distribution of both indices by applying a non parametric measure. We calculate probability densities for TBI by using following kernel dentistry function.

$$f(x) = \frac{1}{nh} \sum_{i=1}^{n} k\left(\frac{x - X_i}{h}\right) \quad (6)$$

Here f(x) kernel density estimator; $X_1 \ldots\ldots X_n$ is the sample of n independent and identically distributed variable X (TBI), h is the bandwidth of interval around "x" and "k" is the kernel function.

The kernel density estimate is the vertical summation of frequencies at each value. The result smooth graphs help us to figure out the nature/shape of the distribution of the TBI and examine its evolution over a given time period.

[11] Uchida and Cook (2004) distinguished between regression effect calculated by (1-β) and mobility effect (1-R). A high β (low regression effect) indicates that specialization is becoming more polarized where as a high value of regression effect shows diversification. Similarly a high value of R (low mobility effect) specifies stability in specialization patterns; it means that there is no or very little movement of services sector along the distribution of TBI. Low value of ρ refers that services sectors move along the distribution a lot.

[12] All the data regarding services trade has been taken online data available at State Bank of Pakistan website: http://www.sbp.org.pk/publications/index2.asp

[13] https://www.wto.org/english/tratop_e/serv_e/serv_sectors_e.htm

[14] Here we will only use TBI measure for further estimations.

The Empirical Findings

The RSCA[15] and TBI measures for Pakistan's bilateral trade with UK, USA, UAE, PRC and KSA have been presented in panel-"a" to "e", respectively, in table-1. The details of each bilateral CA.CDAs are as follows.

In bilateral services trade with UK, Pakistan holds CA in Transport; Financial Services; Computer Related Services, Personal; Cultural & Recreational Services and Government Services while having CDA in the field of Travel; Insurance; Royalties and Other Business Services. One interesting observation is related communication services trade. Initially Pakistan had CA in that services but later on UK became net exporter of communication services to Pakistan and maintaining this advantage till date. This also shows a reversal of CA in this sector. In case of USA, Pakistan has CA in communication, computer related services and government services while it has CDAs in rest of the eight categories of services sector. out these eight services US has maintained its CA in transport, construction, communications, financial and other business services sector whereas in the field of travel, royalties and personal, cultural and recreational services it took CA from Pakistan in the following years and maintaining CA since that time period. Similarly, UAE also enjoys CA over Pakistan in most of traditional services like transport, travel, communication, construction, financial and insurance sectors. Whereas Pakistan has maintained its CA in computer related services, Personal, cultural & recreational and government services sector. However, in other business services category, Pakistan has CDA in this sector but from 2009 onward Pakistan grabbed CA in this sector and retaining it till present.

On the other hand, the CAs directions are quite unique in case of PRC. In the beginning (2007), China had CA in travel, royalties, other business services, Personal, cultural & recreational services and government services. Whereas Pakistan hold the CA in remaining services sector. However during this time period the nature of CA has change quite significantly. Currently china has maintained CA in transport and financial services (initially Pakistan had CA in these services). While Pakistan has gained CA in royalties, other business services, Personal, cultural & recreational services and government services during this time period. The RCA analysis for KSA is also not different than that of PRC. Initially Pakistan had comparative advantage in most of services except travel, financial and Personal, cultural & recreational services. However in the subsequent years the pattern of CA has changed and at present KSA holds CA in transport, communication, insurance along with financial services sector. On the contrary Pakistan has gained CA in travel and Personal, cultural & recreational services along with other sectors. In a nut shell we can say that in computer related and government services, Pakistan has exhibited strong CA, over the time period under study, in trade with these five countries while the sector like transport, travel, insurance, financial and royalties sector Pakistan's services sector demonstrated CDA. A careful comparison between RSCA and TBI explains that the direction of CA is almost same for these indices. For instance a positive value of RSCA is associated with positive value of TBI which indicates that Pakistan is a net exporter of a given service in a specific time period, similarly minus sign of RSCA index corresponds to a negative value of TBI thus making Pakistan net importer of that service in the given year. It is evident from both indices that Pakistan's services trade performance shows mixed results with the trading partners. For instance Pakistan has strong CA in computer related services; personal cultural & recreational servicer and Government services with his trading partners. Similarly Pakistan has CDA in conventional services like transport; travel; insurance and financial services while the sector like construction; communications; royalties and other business services shows mixed results.

[15] Since RSCA is a modified form of RCA therefore we only mention RSCA in the table-1.

Table 1: RSCA and TBI of Pakistan's bilateral services trade with UK, USA, UAE, PRC & KSA

Year	Transport		Travel		communication		Construction		Insurance		Financial		Computer & Information		Royalties & License Fees		Other Business Services		Personal, Cultural & Recreational Services		Government Services	
Panel-a (UK)																						
	RSCA	TBI	RSCA	TBI	RSCA	TBI	RSCA	TBI	RSCA	TBI	RSCA	TBI	RSCA	TBI	RSCA	TBI	RSCA	TBI	RSCA	TBI	RSCA	TBI
2007	0.14	7.59	-0.77	-5.42	0.00	0.01	0.04	0.06	-0.51	-3.48	0.27	1.72	0.11	0.51	-0.96	-1.87	-0.28	-9.36	0.60	0.02	0.43	10.23
2008	0.21	10.49	-0.73	-4.22	0.02	0.05	-0.52	-1.16	-0.47	-2.58	-0.36	-0.71	0.22	1.37	-0.89	-1.73	-0.48	-16.04	0.32	0.09	0.57	14.44
2009	0.18	14.21	-0.52	-2.73	-0.03	-0.16	-0.53	-0.26	-0.52	-2.83	-0.63	-1.50	0.10	0.65	-0.98	-2.28	-0.46	-12.57	-0.86	-0.20	0.37	7.67
2010	0.06	4.21	-0.88	-4.83	0.15	1.85	0.24	0.08	-0.72	-5.95	-0.10	-0.34	0.06	0.66	-0.97	-1.85	-0.36	-8.53	-0.93	-1.54	0.30	16.24
2011	0.14	10.46	-0.92	-6.65	-0.02	-0.09	-0.55	-0.39	-0.35	-4.13	-0.24	-0.75	0.02	0.12	-0.96	-2.78	-0.18	-5.05	-0.91	-0.93	0.23	10.18
2012	0.23	16.58	-0.88	-4.46	-0.08	-0.27	-0.92	-1.06	-0.06	-1.24	-0.08	-0.16	0.05	0.50	-0.97	-2.81	-0.28	-8.50	0.05	0.01	0.10	1.42
2013	0.21	13.31	-0.85	-4.46	-0.29	-1.37	0.42	0.12	-0.64	-6.96	0.29	1.93	0.04	0.45	-0.92	-3.09	-0.15	-5.61	0.40	0.18	0.13	2.49
2014	0.15	8.44	-0.84	-4.78	-0.11	-0.59	0.35	0.15	-0.30	-5.06	0.31	2.75	0.05	0.69	-0.89	-1.74	-0.12	-5.15	0.11	0.05	0.26	5.23
Panel-b (USA)																						
2007	-0.06	-2.23	0.21	8.97	0.29	3.99	-0.59	-1.32	-0.22	-0.53	-0.16	-1.44	0.22	2.38	0.07	0.34	-0.29	-11.98	0.40	0.08	0.05	1.75
2008	-0.10	-3.05	0.19	6.33	0.24	2.78	-0.03	-0.08	-0.18	-0.30	-0.21	-1.19	0.19	2.48	0.17	0.87	-0.39	-17.54	0.09	0.01	0.14	9.69
2009	-0.12	-2.90	0.09	2.28	0.15	2.57	-0.14	-0.17	-0.25	-0.56	-0.21	-1.51	0.09	1.33	-0.14	-0.21	-0.45	-16.28	-0.03	0.00	0.11	15.4
2010	-0.18	-5.16	-0.01	-0.35	0.11	1.87	-0.27	-0.08	-0.22	-0.28	-0.28	-1.39	0.08	0.80	-0.43	-0.45	-0.41	-13.21	-0.37	-0.09	0.11	18.3
2011	-0.13	-3.90	-0.03	-1.22	0.13	2.22	-0.30	-0.11	-0.12	-0.14	-0.28	-1.71	0.09	0.95	-0.60	-0.68	-0.49	-17.85	0.03	0.00	0.16	22.4
2012	0.01	0.49	-0.01	-0.81	0.23	4.49	0.22	0.05	-0.31	-0.60	-0.39	-2.48	0.19	3.64	-0.55	-0.91	-0.35	-14.95	-0.24	-0.04	0.20	11.1
2013	-0.13	-2.62	-0.17	-4.70	0.13	4.74	0.12	0.03	-0.72	-0.94	-0.41	-1.81	0.07	0.86	-0.75	-0.72	-0.46	-15.64	-0.30	-0.05	0.13	20.8
2014	-0.17	-4.09	-0.15	-5.01	0.19	9.14	-0.10	-0.03	-0.02	-0.06	-0.42	-2.50	0.14	2.33	-0.68	-1.00	-0.43	-16.30	-0.04	-0.01	0.18	17.5
Panel-c (UAE)																						
2007	-0.01	-0.56	-0.72	-1.27	-0.54	-1.00	0.61	4.92	-0.38	-0.40	-0.30	-0.11	0.09	0.13	0.59	0.01	-0.15	-2.55	0.42	0.010	0.53	0.82
2008	0.01	0.45	-0.56	-0.82	-0.54	-0.84	0.64	1.61	0.23	0.40	0.19	0.13	0.16	0.36	-0.96	-0.12	-0.19	-2.87	-0.08	-0.001	0.35	1.70
2009	-0.05	-3.22	0.10	0.10	-0.61	-3.22	0.52	2.65	-0.03	-0.06	-0.07	-0.05	0.34	1.57	0.22	0.01	0.10	1.71	0.26	0.001	0.35	0.50
2010	-0.09	-6.84	-0.18	-0.07	-0.25	-1.86	0.50	1.23	-0.20	-0.25	0.26	0.41	0.15	0.67	-0.99	-0.50	0.30	6.65	0.52	0.172	0.38	0.39
2011	-0.13	-11.11	0.38	0.29	-0.23	-1.58	0.47	0.82	-0.28	-0.25	0.09	0.06	0.25	1.22	-0.64	-0.01	0.35	8.83	0.48	0.039	0.42	1.69
2012	-0.16	-13.06	-0.20	-0.42	-0.13	-1.19	0.44	0.93	-0.78	-1.37	-0.06	-0.06	0.28	2.03	0.02	0.00	0.25	6.55	0.43	0.056	0.43	6.53
2013	-0.12	-10.65	-0.48	-0.49	-0.06	-0.49	0.34	0.06	-0.46	-0.73	-0.77	-0.35	0.32	2.59	0.05	0.01	0.18	3.82	0.27	0.072	0.46	6.17
2014	-0.08	-7.18	-0.82	-0.60	0.00	-0.02	-0.71	-1.07	-0.53	-0.60	-0.51	-0.27	0.32	1.53	-0.99	-0.52	0.05	1.01	0.37	0.226	0.48	7.48
Panel-d (PRC)																						
2007	0.33	1.58	-0.74	-0.15	0.94	0.81	-1.00	-0.13	0.43	0.01	0.48	0.08	0.93	0.66	0.00	0.0001	-0.48	-2.75	-	-	-0.84	-0.13
2008	0.24	0.53	-0.82	-0.06	0.93	0.10	0.43	0.06	0.24	0.00	-0.02	-0.01	0.93	0.76	-0.01	-0.001	-0.34	-1.32	-0.61	-0.01	-1.00	-0.06
2009	0.28	5.55	-0.73	-0.13	0.28	0.04	-0.88	-1.12	-0.84	-0.03	0.38	1.58	0.71	0.34	-0.76	-0.004	-0.47	-5.81	0.82	0.023	-0.93	-0.45
2010	-0.30	-3.54	-0.95	-0.06	0.68	0.16	-0.63	-0.18	0.64	0.25	0.75	0.24	0.85	1.73	0.60	0.001	0.17	1.78	-1.00	0.000	-0.24	-0.39
2011	-0.42	-5.50	-0.86	-0.05	0.68	0.10	-0.95	-0.83	0.83	1.07	0.83	3.59	0.83	2.14	0.82	0.003	0.05	0.54	0.77	0.001	-0.82	-1.05
2012	-0.47	-5.27	-0.47	-0.03	0.75	0.26	-0.94	-0.74	0.46	0.01	0.78	0.22	0.78	1.60	0.79	0.003	0.26	4.38	0.84	0.015	-0.12	-0.45
2013	-0.57	-9.87	-0.71	-0.11	0.37	0.09	0.24	0.07	0.55	1.62	0.66	0.34	0.64	1.97	0.71	0.004	0.13	4.58	0.36	0.001	0.39	1.30
2014	-0.65	-11.15	-0.84	-0.29	0.46	0.08	0.53	0.84	0.60	2.64	-0.02	-0.05	0.68	1.76	0.59	0.004	0.17	4.64	0.38	0.000	0.38	1.52
Panel-e (KSA)																						
2007	0.02	1.75	-0.67	-2.99	0.57	0.68	0.39	0.01	0.29	0.02	-0.84	-0.52	0.17	0.05	-1.00	0.01	0.18	0.57	-0.82	0.026	0.22	0.41
2008	0.03	2.43	-0.27	-1.13	0.58	0.35	0.60	0.08	0.47	0.08	-0.94	-0.39	0.60	0.15	-1.00	-0.02	0.24	1.03	0.17	0.002	-0.48	-2.59
2009	-0.02	-1.72	-0.36	-1.88	-0.58	-0.07	0.56	0.17	-0.65	-0.13	-0.89	-0.53	0.56	0.70	-1.00	0.00	0.41	3.22	-	-	0.08	0.24
2010	-0.02	-2.44	-0.51	-0.91	0.38	0.24	0.54	0.20	-0.72	-0.06	-0.87	-0.84	0.54	0.77	0.44	0.01	0.44	2.21	0.48	0.004	0.23	0.82
2011	-0.04	-3.36	-0.49	-1.20	0.31	0.10	0.57	0.22	-0.21	-0.02	-0.93	-0.67	0.57	1.15	-1.00	-0.01	0.44	3.13	0.57	0.001	0.28	0.65
2012	-0.06	-6.35	-0.09	-0.13	-0.26	-0.02	-	-	-0.92	-0.52	-0.94	-0.93	0.53	1.06	-1.00	-0.01	0.46	3.99	0.53	0.004	0.47	2.90
2013	-0.04	-4.32	0.09	0.18	-0.84	-0.31	-1.00	0.00	-0.93	-0.42	-0.91	-2.20	0.52	0.84	-1.00	-0.32	0.37	2.40	0.52	0.004	0.41	4.15
2014	-0.05	-4.95	0.15	0.24	-0.71	-0.14	0.54	0.04	-0.81	-0.40	-0.95	-2.15	0.54	1.13	-1.00	-0.17	0.47	2.46	0.54	0.021	0.36	3.92

Source: Author's Calculation

The table-2 shows sectoral decomposition of services imports and exports. In exports section government services, transport services and other business services constitute more than 75% of total exports. Since Pakistan has CDA in traditional services trade like transport and travel services with most of countries. Both services constitute more than 60% of total imports of Pakistan. Transport services are very closely related to merchandise trade and a good transport services significantly affects the goods as well as services trade. Although Pakistan has been bestowed to carry out all type of transport services due to its geographical location but Pakistan's exports of

services far less than that of it current status. It is largely due to weak infrastructure[16] and poor efficiency of service providers

Table 2: Share of Service Categories in Total Exports and Imports of Services (Percent)

Export of Services								
Service Category	2007	2008	2009	2010	2011	2012	2013	2014
Transport	28.8%	28.9%	29.2%	21.7%	32.8%	21.0%	25.1%	23.3%
Travel	7.4%	7.4%	6.9%	4.6%	7.1%	5.2%	5.9%	4.9%
Construction	1.8%	1.0%	0.4%	0.3%	0.3%	0.5%	0.4%	0.7%
Insurance	1.0%	1.7%	1.1%	0.7%	1.7%	0.8%	1.2%	1.6%
Financial	1.8%	1.3%	2.6%	0.8%	1.4%	0.7%	1.6%	1.3%
Royalties and intellectual fee	1.0%	0.9%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%
Telecommunications	3.3%	2.1%	7.2%	3.6%	4.0%	4.8%	11.2%	7.5%
Computer Related Services	3.4%	4.4%	4.6%	2.9%	4.8%	4.0%	6.3%	6.5%
Other business services	10.0%	11.3%	11.4%	9.8%	14.7%	11.5%	15.2%	14.4%
Personal, cultural, and recreational services	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%
Government goods	41.5%	40.8%	36.3%	55.4%	32.9%	51.4%	32.9%	39.4%
Import of Services								
Transport	37.3%	43.5%	49.4%	52.8%	50.3%	39.4%	44.7%	49.1%
Travel	18.1%	15.6%	10.5%	13.0%	14.1%	16.8%	13.8%	15.0%
Construction	0.5%	0.6%	0.9%	0.4%	1.1%	0.6%	0.2%	0.4%
Insurance	1.6%	1.3%	2.2%	2.0%	2.5%	3.3%	3.1%	3.1%
Financial	1.4%	2.2%	1.7%	1.4%	1.5%	1.3%	2.4%	2.2%
Royalties and intellectual fee	1.2%	1.2%	1.4%	1.7%	1.6%	1.9%	1.6%	2.0%
Telecommunications	1.0%	1.2%	2.6%	2.1%	1.9%	2.3%	2.7%	2.2%
Computer Related Services	1.4%	1.2%	2.1%	2.4%	2.4%	2.2%	2.2%	2.3%
Other business services	33.1%	28.8%	19.0%	15.1%	15.3%	21.6%	20.2%	17.8%
Personal, cultural, and recreational services	0.0%	0.0%	0.2%	0.2%	0.1%	0.0%	0.1%	0.1%
Government goods	4.4%	4.4%	9.9%	8.8%	9.2%	10.5%	9.0%	5.8%

Source: State Bank of Pakistan

On the other side trade openness measure adopted Pakistan has encouraged both merchandise exports and imports thereby increased the use of transport services. As far as travel services are concerned situation is also quite bleak. Same like transport services, travel services has also been effected by weak infrastructure but even worse poor law and order condition in the region has also affected this services. According to the World Economic Forum report (2015) on Travel and Tourism Competitiveness, Pakistan is placed at 121st position among 141 nations. Pakistan is ranked at 138th position in terms of safety and security measures and 125th in terms of tourist services infrastructure thus making Pakistan less attractive for tourists and businessmen. The chronic CDA in these services sectors makes Pakistan a net importer of services from rest of the world.

[16] According to World Economic Forum report, Pakistan is ranked at 105th position out of 141 in terms of air transport infrastructure.

Table 3: Galtonian Regression Analysis

Country	Time Period	α	β	R
UK	2007-2014	-0.00	0.73	0.93
USA	2007-2014	-0.00	0.91	0.67
UAE	2007-2014	-0.00	0.10	0.06
PRC	2007-2014	-0.00	-2.6	0.70
KSA	2007-2014	0.00	-0.40	0.27

Source: The author's computation.

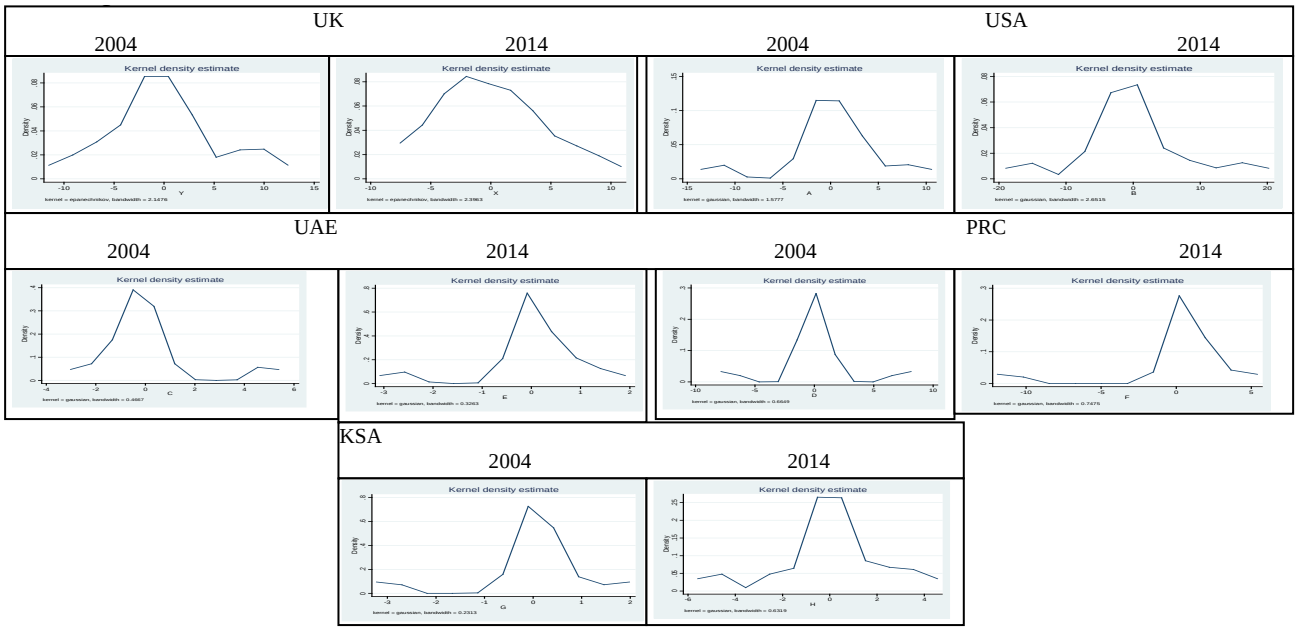

Figure 3: Kernel Density Distribution Graphs
source: author's estimation

The stability of TBI index has been measured by Galtoninan regression (4). Five regression equations have been run by taking dependent variable TBI at time "t2" for with TBI of last period for country "i" and services sector "j" and is regressed against the independent variable of the same index in the year t1. Regression results have been reported in table 3. Since β is significantly different from 1 to 0 this refers that some changes have taken place in the bilateral trade during the time period under study. Given that $0<\beta<1$ for UK, USA and UAE it refers that CAs have increased for those services in Pakistan was initially relatively less specialized and reduced for those services in which was it was highly specialized at the beginning of time. However stability of specialization pattern is higher for USA and UK and very lower for UAE (0.1). On the other hand the value of β coefficient is less than 0 for both PRC and KSA reflecting a radical change CAs in bilateral trade with these countries referring specialization process has reversed. It is quite clear from table 1 and table 2 that CA/CDA composition has change for both KSA and PRC. For instance CA status of 6 out of 11 services categories has changed for PRC whereas CA status of 5 services sectors has changed for KSA[17]. In order to find out the changes in degree of dispersion of the distribution of CA we compare β with R. the absolute value of β is greater than R for all countries except UK

[17] Although CA status of these categories has changed yet their monetary contribution is not significant in overall trade balance.

which indicates that the specialization pattern has become more polarized. It is important to mention that since R is denoted as a measure of mobility of services along the TBI distribution: a high value of R reports that the comparative positions of the single service categories have remained almost same. For UK since R>β it means a decrease in specialization and trade has become less polarized reflecting reduction in dispersion.

Conclusion

In this paper we examined the specialization pattern of Pakistan's services trade with major trading partner as "revealed" by the bilateral trade flows. Different measures of comparative advantage have been adopted to investigate the services trade competitiveness by dividing services into 11 sub-sectors. The study finds out that Pakistan has CDA in the field of transport and travel services. These services together constitute almost two third of total services imports thus contributing significantly to the import bill of Pakistan. Since both services, especially former one, are closely related to merchandise trade therefore if Pakistan wants to boost up trade in merchandise trade, which is undoubtedly its one of the top priority, it has to invest a lot to develop infrastructure for the provision of such services which not only will reduce the import bill but, more importantly, will enable to cater expanding future potential trade also.

A deeper analysis of other services points out the unparalleled importance of computer related services; communication services and government services in Pakistan's exports basket. Although Pakistan has CA in communications and computer related services but their share in Pakistan's total exports quite negligible. Therefore, Pakistan needs to spruce up exports in these categories. The CA in government services also expresses Pakistan's government involvement in international affair to promote peace and ensure stability in the globe. In global services trade scenario, apart from travel and transportation, it is the financial, royalties and other business services which are more important. Whereas despite a fast growing financial; insurance and other business services sectors at domestic level the share these sectors in service exports is quite insignificant. Pakistan needs to focus on this sector by promoting competitions and encouraging outreach in less developed and emerging economies which can be potential customers of such services. The share of construction and personal, cultural & recreational services less than 1% of total service trade and shows a stagnant trend both in exports as well as import.

Furthermore, changes in specialization patterns have examined to find out transformation in bilateral services trade structure. We applied Galtonian analysis and kernel stochastic test the stability of CAs. The relative mobility and regression effect explains that, except UK, Pakistan's specialization pattern in services trade has become more polarized i.e. degree of specialization in narrowing in some specific sectors. Whereas in case of UK it reports a reduction in specialization pattern referring that trade is become less polarized and range of specialization is increasing.

The findings highlight the fact that the expansion of Pakistan's service sector is not an outcome of a well planned policy and program. Globalization, political and other economic factors have driven the service trade in the recent years. Although Pakistan has immense potential in services trade but it is imperative for Pakistan to aggressively pursue new markets and remain efficient and innovative to maintain existing markets. Pakistan should invest more and more both at advance as well as professional education along with the infrastructure required to provide these services.

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